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Abstract

Purpose: This study aimed to explore the relationship between attachment style, sub-clinical symptoms of psychosis and aggression in a general population sample.

Design: Using both convenience and snowball sampling, participants in the community (n=213) completed an online questionnaire including previously validated measures of adult attachment, aggression and psychotic like events.

Findings: Results suggested that there were statistically significant correlations between all study variables. Multiple linear regression demonstrated that total psychotic-like experiences and attachment scores significantly predicted variance in total aggression. Moderation approaches revealed that the relationship between psychotic-like events and aggression was stronger in individuals with more insecure attachment styles.

Research limitations/implications: This generalisability of the results is compromised by the sampling methodology and the use of self-report tools. However, the significant results would support larger scale replications investigating similar variables.

Originality/value: This study suggests there is a relationship between psychotic like experiences and facets of aggression in the general population. The findings suggest that attachment is a contributing factor to aggression associated with psychotic like experiences, and highlight the need for similar investigations within clinical samples. The results imply that attachment may be a useful construct for explanatory models of the relationship between adverse childhood experiences, psychotic experiences and aggression.

Introduction

This study aimed to explore the relationships between attachment, sub-clinical symptoms of psychosis and aggression in a community sample.

Attachment

Attachment theory suggests that human beings are predisposed to form bonds with primary care-givers. A child's experiences with attachment figures will influence his or her internal working models of self and others (Bowlby, 1982), forming a prototype for later relationships (Bartholomew and Horowitz, 1991). The quality of early attachments is related to the child's reliance on attachment figures as a source of security (Ainsworth et al., 1978). A child's internal model of others is influenced by the degree to which the attachment figure is seen as someone who is responsive to the need for support and protection; their internal model of self is influenced by whether or not the self is judged to be someone to whom the attachment figure responds to in a helpful way (Bowlby, 1973).

Adult models of attachment develop Bowlby's (1982) theory of the internal working model, by conceptualising a person's model of self and others as anxiety (sometimes termed dependence) and avoidance in attachment (Crowell, Fraley and Shaver, 1999). Bartholomew and Horowitz (1991) proposed four adult attachment styles on the basis of these dimensions:

- Secure: Individuals who have a positive model of self (low anxiety), and a positive model of others (low avoidance), will feel comfortable with intimacy and autonomy.
- Preoccupied: Individuals who have a negative model of self (high anxiety), but a positive model of others, (low avoidance) may be preoccupied with retaining relationships
- Dismissing: Individuals who have a positive model of self (low anxiety), but a negative view of others, (high avoidance) may be dismissing of intimate relationships
- Fearful: Individuals who have a negative model of self (high anxiety), and a negative model of others, (high avoidance), may be fearful of intimacy and close relationships.

Psychosis

Psychotic experiences have historically been conceptualised as symptoms of mental disorder which include impairments in an individual's perception of reality, such as hallucinations and delusions (e.g. Parker, 2014). While these experiences have traditionally been dichotomised as present or absent for diagnostic purposes (van Os et al., 2000) a body of evidence has demonstrated that these symptoms occur in the general population as well as clinical samples (e.g. van Os et al.,, 2000; Verdoux and van Os, 2002; Stefanis et al., 2002 Loch et al., 2011). The presence of a range of psychotic and psychotic-like experiences (PLEs) in individuals who do not meet the diagnostic threshold of a case in need of treatment has informed the concept of a continuum of psychosis (Esterberg and Compton, 2009). Investigating these experiences in non-clinical samples allows for exploration of a range of psychotic experiences and correlates, rather than including only those at the endpoint of the distribution of the psychotic dimension (Verdoux and van Os, 2002).

Psychosis and Attachment

Across research designs, evidence suggests that adverse events in childhood significantly increase the likelihood of an individual experiencing symptoms of psychosis in adulthood. A review (Read et al., 2005) found that of individuals with psychosis (from both inpatient and community samples) 69% of females and 59% of males had been subject to abuse in childhood. This research compliments earlier findings that individuals with psychosis are more likely to have experienced parental loss (Granville-Grossman, 1966). Similarly, Morgan et al. (2007) found that, controlling for parental history of mental illness, individuals with first-episode psychosis were more likely to have been separated from their parents for at least a year during childhood and to have experienced maternal death. A more recent meta-analysis identified a medium-large effect size of increased rates of childhood adversity in individuals with schizophrenia in comparison to control samples (Matheson et al., 2013).

These adverse childhood events may have a negative impact on attachment style. Models of psychosis highlight that negative beliefs about the self and the world can create vulnerability and maintenance (Penn et al., 1997). This suggests that previous experiences of relationships and traumas contribute to negative beliefs and symptoms of psychosis (Garety et al., 2001). Current experiences of relationships and interpersonal functioning have been associated with relapse and recovery in individuals with psychosis. Warner and Atkinson (1988) found that patients who perceived

their parents negatively and had less contact with them had more relapses and a more severe course of schizophrenia.

Berry et al. (2006) found significant associations between insecure attachment and non-clinical psychotic phenomena in a community sample. Positive psychotic phenomena were associated with anxiety in attachment, and social anhedonia with avoidance in attachment. This suggests that attachment may be a useful construct in understanding PLEs in the general population.

Attachment and Aggression

There is an established relationship between insecure attachment, aggression and offending behaviours. A literature review of offenders and attachment style found that insecure attachment was over-represented in the general offending population, with prevalence ranging from 64-97% (Ratnip, 2013). Some results suggested no differences in attachment style across offenders, with others suggesting this relationship was stronger in sexual offenders.

Other evidence (Bartholomew and Horowitz, 1991; Kobak and Sceery, 1988; Mallinckrodt, 2000) suggests that attachment style is related to different expressions of anger and aggression. For example, dismissing attachment has been associated with hostility, interpersonal coldness, and emotional detachment; pre-occupied attachment has been associated with over-intrusive behaviour, dominance and aggression and fearful attachment have been associated with difficulties in assertiveness, social inhibition, anger and aggression.

Mikulincer and Shaver (2007) found that individuals with a dismissive attachment style were more likely to reactively express anger, as well as be more critical and devaluing of other's emotional needs and controlling through their anger. Individuals with a pre-occupied attachment style were more likely to express irritation and anxiety and externalise blame, as well as find it difficult to be soothed by others. Individuals with a fearful attachment style were more likely to show extreme expressions of anger and be violent towards themselves and others. Ratip (2013) also found that of secure psychiatric patients, those with a secure attachment style had lower anger temperament scores compared to those with insecure attachment styles.

Violence and Psychosis

A significant body of research has investigated the relationship between violence and psychosis. A meta-analysis of 204 studies, suggested psychosis was associated with a 49-68% increase in the odds of violence (Douglas, Guy and Hart, 2009). However, this review highlighted that there was substantial dispersion amongst effect sizes as a function of moderator variables and challenges synthesising data due to methodological differences. This review identified positive symptoms of psychosis (among others) as associated with violence, however the authors highlight the need for further investigation of the symptom-violence association. The authors conclude that although individuals with psychosis were at an increased risk of violence in comparison to individuals with no mental disorder, there was no elevated risk when compared to individuals with externalising psychopathologies.

A comprehensive review of violence in first episode psychosis suggested that while rates of violence were relatively high in this population (in comparison to individuals in a later stage of illness), the frequency of violence decreased with severity. Severity of psychotic symptoms was associated with serious violence, but not with less severe forms of aggression (Large and Nielssen, 2011). Similar relationships have been explored in community samples, suggesting that PLEs are associated with aggressive behaviour, in particular hallucinatory behaviour (Nederlof, Muris and Hovens, 2012). Mojtabai (2006) found that unusual perceptual experiences and paranoid ideation were associated with violence. Kinoshita et al. (2011) suggested that most forms of PLE were associated with violence towards objects, and feelings of persecution and hearing voices were associated with violence towards people.

Research exploring this link suggests that variables such as personality (Eysenck and Eysenck, 1970), dispositional anxiety, anger (Posner, Russell and Peterson, 2005) and drug use (Allen et al., 1997) may be relevant. A number of studies have suggested that substance use accounts for a large proportion of violence in individuals with psychosis (Soyka, 2000; Fazel et al., 2009). However, while substance use may increase the risk of criminality in individuals with psychosis, it does not fully explain the risk of violence (Short et al., 2013). A recent meta-analysis suggested that experiences of childhood maltreatment are a significant risk factor for violence to others in individuals with psychosis (Green, Browne and Chou, 2017), emphasising the need to explore the mechanisms of this relationship.

In a sample of individuals with schizophrenia, attachment style, mentalisation (the ability to understand and attribute cognitive and affective mental states to oneself and others) and personality variables have been found to discriminate between impulsive and premeditated aggression (Bo et al., 2013). In particular, pre-meditated aggression was associated with: positive representations of self and negative representations of other; diminished mentalisation and more severe personality pathology. However, given evidence that the association between aggression towards others and psychotic experiences is present in non-clinical samples, there is a need to investigate the role of attachment in this relationship in the general population.

Given the established links between attachment, violence and psychosis, the primary aim of this study is to investigate whether attachment style explains some of the variance in aggression towards others associated with PLEs in a general population sample. The secondary aim is to establish whether this relationship changes depending on either the type of attachment, type of PLE or type of aggression.

Method and Materials

Participants and Procedure

An a-priori power calculation using g*power (Faul et al., 2009) suggested a minimum sample size of 138 participants to achieve 95% power for fixed model, linear multiple regression with 5 variables. Recruitment was online via convenience sampling, participants were approached directly via email and indirectly via social media (facebook and a 'call for participants' website). Participants were encouraged to share the link to the study (snowball sampling). In total, 213 respondents completed the survey. Respondents were taken to an information page, advising them they would be participating in a study exploring 'attachment, experiences and emotions', and explaining their right to withdraw and anonymity. If participants consented, they were asked to complete demographic information before psychometric assessments. At the end of the survey, debrief information and details of supportive organisations were provided.

The research was given a favourable opinion by the University of Nottingham's Faculty of Medicine and Health Sciences Research Ethics Committee.

Measures

Psychosis: Community Assessment Psychic Experience (CAPE)-42; Stefanis et al. (2002)

The CAPE-42 is a 42-item scale that has proved to be a stable, reliable and valid assessment of self-reported PLE (Mossaheb et al. 2012; Fonseca-Pedrero et al., 2012). The instrument has 18 positive-symptom items, 14 negative-symptom items and 8 depressive-symptom items. Stefanis et al. (2002) identified that the scale is valid, and that dimensions of psychosis are approximately normally distributed in the general population. The tool has separate symptom and distress scales, only the symptom scale was used in the current study. Total scale internal consistency (Cronbach's alpha) was excellent in this study (α=.925).

Adult Attachment: Psychosis Attachment Measure (PAM); Berry et al. (2006).

The PAM was developed for use in both clinical and non-clinical populations. The scale has demonstrated good internal reliability and good-to-acceptable test-retest reliability (Berry et al., 2006). The scale has 16 items, each on a four point likert scale. Scores translate into two subscales: anxiety and avoidance. Eight items assess attachment avoidance and eight items assess attachment anxiety. Total scale internal consistency was good in this study (α=.814).

Aggression: The Aggression Questionnaire, Buss and Perry (1992)

The aggression questionnaire is a self-report tool designed to measure facets of aggression towards others, and has demonstrated strong internal consistency and stability over time (Buss and Perry, 1992). More recent studies have identified good test-retest reliability and internal consistency, for both subscales and general questionnaire (Harris, 1995; Gerevich, Bacskai and Czobor, 2007). The scale provides four sub-scales:

- Physical aggression – This scale relates to behavioural aspects of physical aggression including actual violence.
- Verbal aggression – This scale relates to behavioural aspects of verbal aggression, including arguments and disagreements.
- Anger – This scale relates to the affective experience of anger and difficulties controlling temper.

- Hostility – This scale relates to cognitive aspects of hostility, including suspicion and resentment.

The scale is comprised of 29 items, each answered on a five-point likert scale. Total scale internal consistency was excellent in this study (α=.915).

Substance Use

Questions regarding substance use (including cannabis, legal high and alcohol use) were included as potential confounding variables. This included frequency of intake of alcohol, cannabis and other illicit substances each week, and how often an individual would drink more than three drinks on one occasion.

Data Analysis

Missing data were replaced by mean imputation to maintain sample size, and power of statistical analysis. No data were excluded from analyses, as no individual missed more than 1 question per scale.

Data were positively skewed but unimodal. A 1-sample K-test was conducted on each scale, all of which were significant ($p<.01$), suggesting distributions were non- normal. Correlational data was analysed using non-parametric analyses. Data were reviewed for assumptions of linear multiple regression, and outliers via distance (more than 3 standard deviations from the norm) and influence were removed from analysis. All analyses were conducted using IBM SPSS Statistics 22.

Results

Of 213 participants, the median age was 32.64 years (range 18-64), 42 were male and 169 were female. 82.9% of the sample identified themselves as British, and the majority of participants had an Undergraduate level of education (1 PhD, 9 Doctorate, 47 postgraduate, 102 undergraduate, 34 A- Levels, 18 GSCEs).

Spearman's Correlation Coefficients

A Spearman's non-parametric correlation was used to assess bivariate relationships between variables. Positive, statistically significant, relationships were found between all total measure scores.

A strong positive correlation was found between total attachment and total PLE scores (r = .643, p <.001); a weaker positive correlation was seen between total attachment and total aggression scores (r = .346, p <.001) a moderate positive correlation was seen between total PLE scores and total aggression (r = .546, p<.001).

Relationships differed between sub-scales. All PLE domains showed positive, statistically significant (p≤.001) correlations with aggression scores. PLE domains (positive, depressive and negative) were most closely associated with hostility scores (r(211)=.441, p<.001.; r(211)=.576, p<.001.; r(211)=.504, p<.001.) respectively. Physical aggression was most strongly correlated with positive symptoms; r(211)=.319, p<.001.Verbal aggression was most strongly correlated with negative symptoms; r(211)=.206, p<.002. Anger scores were most strongly correlated with depressive symptoms; r(211)=.429, p<.001. Hostility scores were also most strongly correlated with depressive symptom scores; r(211)=.576, p<.001.

Anxious and Avoidant attachment were both positively correlated with hostility; r(211)=.486, p<.001; r(211)=.417, p<.001 respectively. Physical aggression was most strongly correlated with avoidant attachment scores, with a weak, positive relationship; r(211)=.184, p<.01. Verbal Aggression was not significantly related to Avoidant or Anxious attachment. Anger and Hostility Scores were both positively related to Anxious Attachment (r(211)=.265, p=<.001; r(211)=.486, p=<.001. respectively).

There were positive, statistically significant, relationships between all the sub-domains of PLE and Attachment. Positive symptoms were most strongly correlated with avoidant attachment (r(211)=.451, p<.001), depressive symptoms were most strongly correlated with anxious attachment (r(211)=.554, p<.001), and negative symptoms are most strongly correlated with avoidant attachment (r(211)=.480, p<.001).

Multiple Linear Regression

Influence of total PLE scores and total attachment scores on total aggression scores

A multiple-linear regression analysis was completed, including total PLE and attachment scores as predictors, and total aggression score as the criterion variable. Assumptions for multiple-linear regression were met, and data were assessed for multi-collinearity and removed if applicable. Factors were entered using the 'enter' method.

The results indicated that the two factors explained 32.7% of the variance in total aggression (adjusted R^2=32.7, F(2,211)=46.864, p<0.001). Total PLE score was the most influential, and the only significant predictor in the model (β=.573, t=7.579, p<0.0001), total attachment score did not significantly predict additional variance in total aggression (β=-.002, t=-.010, p>0.05).

The model became slightly stronger when measures of legal high and cannabis use were entered prior to attachment and PLE scores (adjusted R^2 =41.2, F(4,209)=35.87, p<0.001). However, neither cannabis (β=007, t=.126, p>0.05) nor legal high use (β=.070, t=.126, p>0.05) were significant predictors in the model.

Influence of Subscales of PLE and Attachment on Aggression Scores

Analysis was then conducted to investigate the impact of sub-scales of attachment (anxiety and avoidance) and PLEs (positive, negative and depressive symptoms) on total aggression.

The results indicated that the five factors explained 41.1% of the variance in total aggression scores (adjusted R^2=41.1, F(5,208)=28.55, p<0.001). Positive symptoms (β=.223, t=3.070, p<0.01), negative symptoms (β=.226, t=2.805, p>0.01) and depressive symptoms (β=.253, t=2.996, p>0.01) were significant predictors in the model. Neither anxious (β=.029, t=.425, p>0.05) nor avoidant (β=.021, t=.302, p>0.05) attachment contributed significantly to the prediction of total aggression.

The five-factor regression analysis was also completed for aggression sub-domains. These results are summarised in Table 1.

Table 1. About here

The five-factor analysis provides the strongest explanatory model for hostility, and the weakest for verbal aggression. Across all models, PLE sub-domains were significant predictors, attachment sub-scales were not.

Interaction Between Total PLE and Attachment Scores in Predicting Total Aggression

An interaction term was created for total PLE x total Attachment scores, to see if this interaction predicted variance in total aggression scores. Data were centred to account for collinearity in this analysis. While the total model was significant (adjusted R^2 =37.2, F(3,209)=42.80, p<0.001), the interaction term did not significantly predict variance in aggression (β=.033, t=.0483, p>0.05). In keeping with the initial two-factor model, the only significant predictor of variance in aggression was total PLE (β=.562, t=6.709, p<0.0001), total attachment scores were not significant predictors (β=.052, t=.724, p>0.05).

However, using the Aiken and West (1991) moderation approach it can be seen that those in higher attachment score groups (i.e. more insecure attachments) demonstrated a stronger relationship between PLE and aggression. Bivariate correlation between Total PLE and Total Aggression was *r*=0.62 for individuals with high attachment scores; *r*=0.45 for individuals with moderate attachment scores, and *r*=0.43 for those with low attachment scores. See figure 1. for a graph of linear regression lines for the relationship between total PLEs and total aggression in the three attachment groups.

Figure 1. About here

Discussion

This study found that, as predicted, there were significant relationships between measures of attachment, PLEs and aggression.

These findings support a link between Attachment and PLE, highlighting that attachment is an important factor in understanding psychotic experiences (Penn et al., 1997; Mickelson, Kessler and Shaver, 1997). Previous research using community samples has suggested that positive symptoms were closely related to anxious attachment and anhedonia related to avoidant attachment (Berry et al., 2006). This study found that positive symptoms were more strongly correlated with avoidant attachment, and depressive symptoms most closely related to anxious. This discrepancy may be due to differing measurement tools or samples, however further research is necessary.

An avoidant attachment style suggests a negative internal model of others, in the current study this was associated with increased positive PLEs. The traumagenic neurodevelopmental model of psychosis (Read et al., 2014) highlights a heightened physiological responsivity to stressors (as a consequence of childhood adversity) as a potential factor in the aetiology of psychosis. It is plausible that a negative internal working model of others is associated with an increased perception of others as unsafe or threatening, resulting in an increase in the threat response associated with PLEs (including paranoia) in the general population. This finding would warrant replication and further exploration.

These analyses suggested that participants reporting greater anxiety or avoidance in attachments also reported increased aggression, in keeping with previous findings (Ratip, 2013; Bartholemew and Horowitz, 1991; Kobak and Screery, 1988; Mallinckrodt, 2000). When considering subscales of aggression, this was true for physical aggression, anger and hostility, but not for verbal aggression. This is plausibly due to verbal aggression being influenced by other factors, but would warrant further exploration. Hostility showed the strongest relationship with attachment styles, and was most closely related to anxious attachment. Physical aggression was only significantly related to avoidant attachment.

Buss and Perry (1992) consider anger expression to fall into either cognitive, affective or instrumental (behavioural) domains. Verbal and physical aggression are both behavioural aspects of aggression, therefore the current results suggest that the behavioural manifestation of aggression has weaker relationships with attachment (and PLEs) than cognitive (hostility) or affective (anger) aggression. Future research is necessary to clarify this relationship. Total attachment scores were a stronger predictor of aggression than either anxious or avoidant attachment problems alone.

PLE scores had a stronger relationship with aggression than attachment scores. Similarly to attachment, all PLE sub-scales showed the strongest relationship with hostility and weakest with physical and particularly verbal aggression, although this relationship remained significant. Each aggression domain was linked most significantly with different PLE symptoms; physical aggression with positive symptoms, verbal aggression with negative symptoms and anger and hostility with depressive symptoms.

These results support evidence of a link between specific symptoms of psychosis and aggression (Douglas, Guy and Hart, 2009; Jones et al., 2010) particularly in community samples, (Nederlof, Muris and Hovens, 2012; Mojtabai, 2006; Kinoshita et al., 2011), although direct comparison is limited due to differing methodology. Findings suggest that particular symptoms of psychosis may relate to different facets of aggression. The finding that positive PLEs were most closely related to physical aggression is in keeping with previous evidence that hallucinations are associated with aggression in community samples (Nederlof, Muris and Hovens, 2012). However, while the symptom-violence link may be present in community samples as well as clinical samples, there remains a need to understand the mechanisms of this relationship.

Total PLE and attachment scores predicted variance in aggression, although PLE was the only significant predictor in the model. Attachment scores did strengthen the models of verbal aggression and hostility, suggesting that attachment plays a more influential role in these dimensions of aggression.

The five factor model of aggression (Attachment domains and PLE domains) was statistically significant. These factors accounted for over half of variance in hostility scores. Future research may benefit from considering whether hostile aggression is seen more frequently in individuals with psychosis and attachment problems. Formulation and management plans relating to hostility may benefit from considering both symptom and attachment variables.

Although including the interaction term did not improve models of aggression, the relationship between PLE and aggression was stronger in individuals with more insecure attachment styles. This suggests that PLEs were more closely associated with aggression in individuals reporting the highest levels of attachment insecurity. This finding requires replication, but suggests that attachment may be a relevant factor in the assessment and management of individuals experiencing PLE.

A more insecure attachment style is associated with childhood adversity and early trauma, and the current findings support the importance of considering early trauma in the assessment and formulation of risk in individuals experiencing symptoms of psychosis. The findings suggest that there was a closer relationship between PLEs and aggression in individuals with greater anxiety and avoidance in attachment. It is plausible that individuals with a more negative internal working model of self and others are more prone to experiencing PLEs associated with threat (e.g. paranoia) or a

derogatory view of the self. While this hypothesis remains tentative, there is some evidence that trauma affects the nature of PLEs in the community (Freeman and Fowler, 2009), and that negative emotions in hallucinatory experiences and persecutory delusions are associated with risk in individuals with schizophrenia (Cheung et al., 1997). The current research suggests that attachment may be a useful framework for understanding the relationship between early adversity, symptoms of psychosis and risk of aggression towards others.

The current findings also support the hypothesis that these relationships are present in the general population as well in samples of individuals with schizophrenia (or other psychotic disorders). Longitudinal research suggests that clinical psychosis may be a rare outcome of progressively more persistent PLEs (Dominguez et al., 2009). The current study suggests that individuals with more insecure attachment styles were more prone to PLEs, which were more closely associated with aggression than in individuals with more secure attachment styles. This would tentatively suggest that attachment may be a useful area of formulation and intervention for at-risk populations and early intervention services, although further research is necessary to establish this. Investigating the potential protective role of systemic interventions which incorporate attachment perspectives in the treatment of children with complex trauma (e.g. Kinniburgh et al., 2017) may be a useful area of future research into the prevention of aggression associated with symptoms of psychosis.

Limitations

This generalisability of these results is limited by the sampling methodology, there is an inherent bias in a convenience sample. All participants self-selected for the study, and there is some evidence that those who self-select are more likely to be experiencing psychological difficulties (Freeman et al. 2005). The study was also biased towards female respondents, given that there is evidence that male and female psychiatric inpatients vary in their expression of aggression (e.g Picken et al., 2010) this again limits the generalisability of the results, particularly to clinical samples. Similarly, there is a reliance on self-reporting, leaving the results subject to responder bias and social desirability. Given the self-report nature of the psychometric tools, it is plausible that the results are affected by self-appraisal, for example individuals with less secure attachment styles may perceive themselves as more aggressive. Future replications may benefit from having behavioural correlates or informant information to support self-report measures.

This study employed a cross-sectional design, and therefore conclusions about inference and causality are theoretical. The significant results would support larger scale, possibly longitudinal, replications.

Relatively few participants reported recent substance misuse in the current study, future replications may benefit from larger samples to more fully investigate the potential effect of substance use on the identified relationships.

Conclusions

This research identifies relationships between attachment, PLE and aggression in individuals in the community. The results suggest that attachment is a contributing factor to aggression associated with PLE and that this relationship exists in community samples. It tentatively supports the hypothesis that addressing risk in individuals with PLE should go beyond symptom-focussed work, and consider associated attachment problems. The findings suggest that risk assessments and formulations should consider specific symptoms and problems with attachment as contributing to aggression, in particular hostility (or cognitive aggression). These results highlight the need to consider attachment problems as part of the aetiology of PLE and associated behaviours. There is substantial evidence that insecure attachment leads to poor engagement and poorer outcomes for individuals with psychosis (Gumley et al., 2014), these findings suggest that attachment is central to the formulation and treatment of individuals experiencing PLE.

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Table 1. Five factor Regression models with Physical Aggression, Verbal Aggression, Anger and Hostility Scores as the Criterion variables (N=213)

Criterion Variable	F Value	Sig.	R^2 Variance
Physical Aggression	F(5,209)= 9.25	.000	18.4%
Verbal Aggression	F(5,210)= 2.94	.014	6.7%
Anger	F(5,210)= 16.40	.000	28.5%
Hostility	F(5,210)= 44.71	.000	52.0%

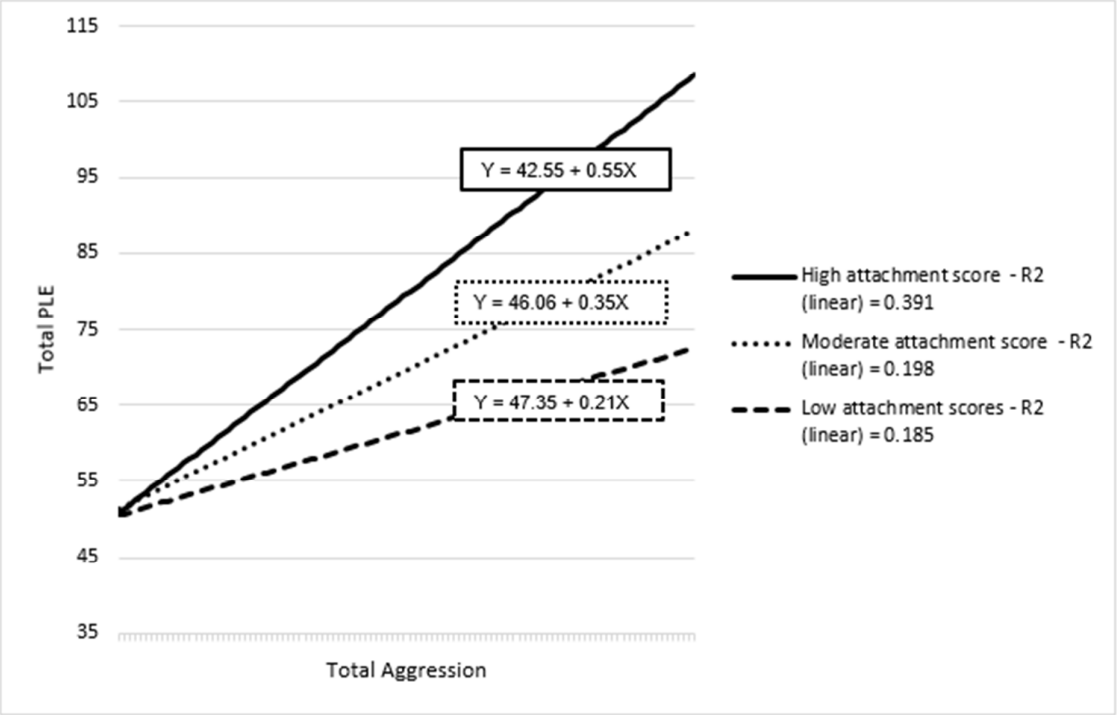

Figure 1. linear regression lines for the relationship between total PLEs and total aggression by attachment group